

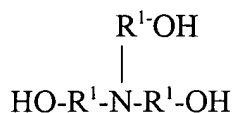
butyl-m-phenylene-diisocyanate, 4-methoxy-m-phenylenediisocyanate, 4-phenoxy-m-phenylenediisocyanate, 4-chloro-m-phenyldiisocyanate, toluenediisocyanate, m-xylylenediisocyanate, p-xylylenediisocyanate, 1,4-naphthalenediisocyanate, cumene-1,4-diisocyanate, durene-diisocyanate, 1,5-naphthylenediisocyanate, 1,8-naphthylenediisocyanate, 1,5-tetrahydronaphthylenediisocyanate, 2,6-naphthylenediisocyanate, 1,5-tetrahydronaphthylenediisocyanate; p,p-diphenylenediisocyanate; 2,4-diphenylhexane-1,6-diisocyanate; methylenediisocyanate; ethylenediisocyanate; trimethylenediisocyanate, tetramethylenediisocyanate, pentamethylenediisocyanate, hexamethylenediisocyanate, nonamethylenediisocyanate, decamethylene-diisocyanate, 3-chloro-trimethylenediisocyanate and 2,3-dimethyltetramethylenediisocyanate, among numerous others. Isophorone diisocyanate is used the preferred diisocyanate used in the present invention.

In the Claims:

Please amend the claims as follows:.

1. (Currently amended) A composition for use in personal care products produced by the method of:

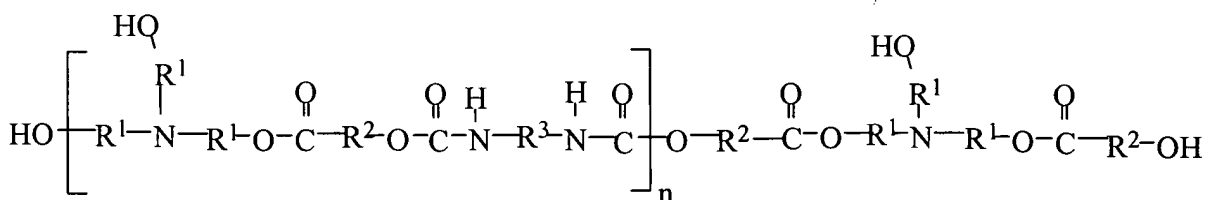
a. producing a trialkanolamine fatty acid ester comprising reacting a trialkanolamine according to the general structure:



where R¹ is a C₂ to C₁₂ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group, with a C₂ to C₂₅ acid optionally having at least one free hydroxyl group or a triglyceride comprising C₁₀ to C₂₅ fatty acids optionally having at least one free hydroxyl group under conditions effective to produce a trialkanolamine mono-, di- or trifatty acid ester and then

reacting said trialkanolamine fatty acid ester with a C_4 to C_{24} diisocyanate to produce a polyurethane trialkanolamine fatty acid ester.

2. (Currently amended) The composition according to claim 1 having the chemical formula I:



Formula I

wherein R^1 is a C_2 to C_{12} saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group, but is preferably unsubstituted;

R^2 is a C_1 to C_{24} saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon

group wherein said hydrocarbon group may be a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or a substituted alkylphenyl or alkylbenzyl group;

R^3 is a C_2 through C_{22} linear, cyclic or branch-chained saturated or unsaturated hydrocarbon group which is substituted or unsubstituted, an aromatic group, including a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or substituted alkylphenyl or alkylbenzyl group; and

n is an integer from 2 to 5,000.

3. (Original) The composition according to claim 1 wherein said trialkanolamine is triethanolamine

4. (Original) The composition according to claim 1 wherein said fatty acid is selected from the group consisting of caproic, caprylic, capric, lauric, myristic, palmitic, stearic, arachadonic acid, linoleic, oleic, linoleic, linolenic, 2-ethylhexoic, isooctanoic, pelargonic, heptanoic, undecanoic, isoluric, isomyristic, isopalmitic, isostearic, coconut fatty acids, palm kernal fatty acids, soybean fatty acids, safflower fatty acids, castor oil fatty acids, lactic acid, glycolic acid, glycolic acid, alpha hydroxy butyric acid, alpha hydroxy pentanoic acid, alpha hydroxy hexanoic acid, alpha hydroxy heptanoic acid, alpha hydroxy octanoic acid, alpha hydroxy nonanoic acid, alpha hydroxy decanoic acid, alpha hydroxy dodecanoic acid, salicylic acid, ricinoleic acid, 12-hydroxystearic acid, erucic acid, oleic acid, behenic acid and mixtures, thereof.

5. (Original) The composition according to claim 1 wherein said fatty acid is selected from the group consisting of ricinoleic acid, oleic acid, erucic acid lactic acid, salicylic acid and mixtures, thereof.

6. (Original) The composition according to claim 1 which is further quaternized with a quaternizing agent.

7. (Original) The composition according to claim 1 wherein said diisocyanate is selected from the group consisting of isophoronediiisocyanate, m-phenylene-diisocyanate, p-phenylenediisocyanate, 4,4-butyl-m-phenylene-diisocyanate, 4-methoxy-m-phenylenediisocyanate, 4-phenoxy-m-phenylenediisocyanate, 4-chloro-m-phenyldiisocyanate, toluenediisocyanate, m-xylenylenediisocyanate, p-xylenylenediisocyanate, 1,4-napthalenediisocyanate, cumene-1,4-diisocyanate, durene-diisocyanate, 1,5-napthylenediisocyanate, 1,8-napthylenediisocyanate, 1,5-tetrahydronaphthylenediisocyanate, 2,6-naphthylenediisocyanate, 1,5-tetrahydronaphthylenediisocyanate; p,p-diphylenediisocyanate; 2,4-diphenylhexane-1,6-diisocyanate; methylenediisocyanate; ethylenediisocyanate;

trimethylenediisocyanate, tetramethylenediisocyanate, pentamethylenediisocyanate, hexamethylenediisocyanate, nonamethylenediisocyanate, decamethylene-diisocyanate, 3-chloro-trimethylenediisocyanate and 2,3-dimethyltetramethylenediisocyanate and mixtures thereof.

8. (Original) The composition according to claim 1 wherein said diisocyanate is isophorone diisocyanate.

9. (Original) The composition according to claim 3 wherein said diisocyanate is isophorone diisocyanate.

10. (Original) The composition according to claim 4 wherein said diisocyanate is isophorone diisocyanate.

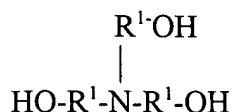
11. (Original) The composition according to claim 6 wherein said diisocyanate is isophorone diisocyanate.

12. (Original) The composition according to claim 6 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

13. (Previously amended) The composition according to claim 1 wherein said triglyceride is selected from the group consisting of castor oil, coconut oil, palm kernel oil, soybean oil, safflower oil and rape seed oil.

14. (Currently amended) A polymeric composition for use in personal care products produced by the process of:

a. reacting a trialkanolamine according to the general structure:



with a C₂ to C₂₅ acid optionally having at least one free hydroxyl group or a triglyceride comprising C₁₀ to C₂₅ fatty acids optionally having at least one free hydroxyl group under conditions effective to produce a trialkanolamine mono-, di- or trifatty acid ester;

b. reacting said trialkanolamine fatty acid ester according to step a with a C₄ to C₂₄ diisocyanate under conditions effective to cause polymerization of said ester with said diisocyanate to produce a polyurethane trialkanolamine fatty acid ester; and

c. reacting said polyurethane trialkanolamine fatty acid ester according to step b with a quaternizing agent to produce a polyurethane trialkanolamine fatty acid ester quat.

15. (Original) The composition according to claim 14 wherein said trialkanolamine is triethanolamine

16. (Original) The composition according to claim 14 wherein said fatty acid is selected from the group consisting of caproic, caprylic, capric, lauric, myristic, palmitic, stearic, aracidonic acid, linoleic, oleic, linoleic, linolenic, 2-ethylhexoic, isooctanoic, pelargonic, heptanoic, undecanoic, isoluric, isomyristic, isopalmitic, isostearic, coconut fatty acids, palm kernal fatty acids, soybean fatty acids, safflower fatty acids, castor oil fatty acids, lactic acid, glycolic acid, glycolic acid, alpha hydroxy butyric acid, alpha hydroxy pentanoic acid, alpha hydroxy hexanoic acid, alpha hydroxy heptanoic acid, alpha hydroxy octanoic acid, alpha hydroxy nonanoic acid, alpha hydroxy decanoic acid, alpha hydroxy dodecanoic acid, salicylic acid, ricinoleic acid, 12-hydroxystearic acid, erucic acid, oleic acid, behenic acid and mixtures, thereof.

17. (Original) The composition according to claim 14 wherein said fatty acid is selected from the group consisting of ricinoleic acid, oleic acid, erucic acid lactic acid, salicylic acid and

mixtures, thereof.

18. (Original) The composition according to claim 14 wherein said diisocyanate is selected from the group consisting of isophoronediiisocyanate, m-phenylene-diisocyanate, p-phenylenediisocyanate, 4,4-butyl-m-phenylene-diisocyanate, 4-methoxy-m-phenylenediisocyanate, 4-phenoxy-m-phenylenediisocyanate, 4-chloro-m-phenyldiisocyanate, toluenediisocyanate, m-xylylenediisocyanate, p-xylylenediisocyanate, 1,4-napthalenediisocyanate, cumene-1,4-diisocyanate, durene-diisocyanate, 1,5-napthylenediisocyanate, 1,8-napthylenediisocyanate, 1,5-tetrahydronaphthylenediisocyanate, 2,6-napthylenediisocyanate, 1,5-tetrahydronaphthylenediisocyanate; p,p-diphylenediisocyanate; 2,4-diphenylhexane-1,6-diisocyanate; methylenediisocyanate; ethylenediisocyanate; trimethylenediisocyanate, tetramethylenediisocyanate, pentamethylenediisocyanate, hexamethylenediisocyanate, nonamethylenediisocyanate, decamethylene-diisocyanate, 3-chloro-trimethylenediisocyanate and 2,3-dimethyltetramethylenediisocyanate and mixtures thereof.

19. (Original) The composition according to claim 14 wherein said diisocyanate is isophorone diisocyanate.

20. (Original) The composition according to claim 15 wherein said diisocyanate is isophorone diisocyanate.

21. (Original) The composition according to claim 16 wherein said diisocyanate is isophorone diisocyanate.

22. (Original) The composition according to claim 17 wherein said diisocyanate is isophorone diisocyanate.

23. (Original) The composition according to claim 14 wherein said quaternizing agent is

selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

24. (Original) The composition according to claim 15 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

25. (Original) The composition according to claim 16 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

26. (Original) The composition according to claim 17 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

27. (Original) The composition according to claim 18 wherein said quaternizing agent is selected from the group consisting of dimethyl sulfate, diethyl sulfate, methyl bromide, benzyl chloride, ethyl benzyl chloride, methyl benzyl chloride, dichloroethyl ether, epichlorohydrin, ethylene chlorohydrin, methyl chloride, pyridinium chloride and allyl chloride.

28. (Original) The composition according to claim 14 wherein said triglyceride is selected from the group consisting of castor oil, coconut oil, palm kernel oil, soybean oil, safflower oil and rape seed oil.

29. Cancelled.

30. (Previously amended) The composition according to claim 57 wherein R¹ is an unsubstituted hydrocarbon group.

31. (Previously amended) The composition according to claim 57 wherein R² is a C₉ to C₂₄ hydrocarbon group.

32. (Previously amended) The composition according to claim 57 wherein R³ is a C₆ to C₁₂ hydrocarbon group.

33. (Original) The composition according to claim 30 wherein R³ is an isophorone group.

34. (Currently amended) The composition according to claim ~~30~~ 28 wherein R³ is an isophorone group.

35. (Original) The composition according to claim 31 wherein R³ is an isophorone group.

36. (Original) The composition according to claim 32 wherein R³ is an isophorone group.

37. Cancelled.

38. (Previously amended) The composition according to claim 58 wherein R⁴ is selected from the group consisting of methyl, ethyl, propyl, benzyl, phenyl, alkyl benzyl, ethyl, propyl, benzyl, phenyl, alkyl benzyl, allyl methyl and allyl.

39. (Previously amended) The composition according to claim 58 wherein R^5 is selected from the group consisting of anionic chloride, bromide, iodide, fluoride, carboxylate, mono- or dianionic sulfate and mono-, di- and tri-anionic phosphate.

40. (Original) The composition according to claim 38 wherein R^5 is selected from the group consisting of anionic chloride, methyl sulfate and ethyl sulfate.

41. (Previously amended) The composition according to claim 58 wherein R^1 is an unsubstituted hydrocarbon group.

42. (Previously amended) The composition according to claim 58 wherein R^2 is a C_9 to C_{24} hydrocarbon group.

43. (Previously amended) The composition according to claim 58 wherein R^3 is a C_6 to C_{12} hydrocarbon group.

44. (Previously amended) The composition according to claim 58 wherein R^3 is an isophorone group.

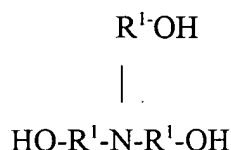
45. (Original) The composition according to claim 38 wherein R^3 is an isophorone group.

46. (Original) The composition according to claim 39 wherein R^3 is an isophorone group.

47. (Original) The composition according to claim 40 wherein R^3 is an isophorone group.

48. (Currently amended) A method of making a polyurethane composition for use in personal products comprising:

a. reacting a trialkanolamine according to the general structure:



wherein R¹ is a C₂ to C₁₂ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group, with a C₂ to C₂₅ acid optionally having at least one free hydroxyl group or a triglyceride comprising C₁₀ to C₂₅ fatty acids optionally having at least one free hydroxyl group under conditions effective to produce a trialkanolamine mono-, di- or trifatty acid ester;

b. reacting said trialkanolamine fatty acid ester according to step a with a C₄ to C₂₄ diisocyanate under conditions effective to cause polymerization of said ester with said diisocyanate to produce a polyurethane trialkanolamine fatty acid ester; and

c. reacting said polyurethane trialkanolamine fatty acid ester according to step b with a quaternizing agent to produce a polyurethane trialkanolamine fatty acid ester quat.

49. (Original) A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 1.

50. (Original) A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 3.

51. (Original) A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected

from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 14.

52. (Original) A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 15.

53. (Original) A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 16.

54. (Original) A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 17.

55. (Original) A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 18.

56. (Original) A personal care product to be used in contact with the skin, hair or nails said personal care product comprising a mixture of effective amounts of components selected from the group consisting of water, solvents, emollients, humectants, emulsifiers, surfactants, thickeners, coloring agents, preservatives and fragrances, said composition further comprising an effective amount of at least one compound according to claim 19.

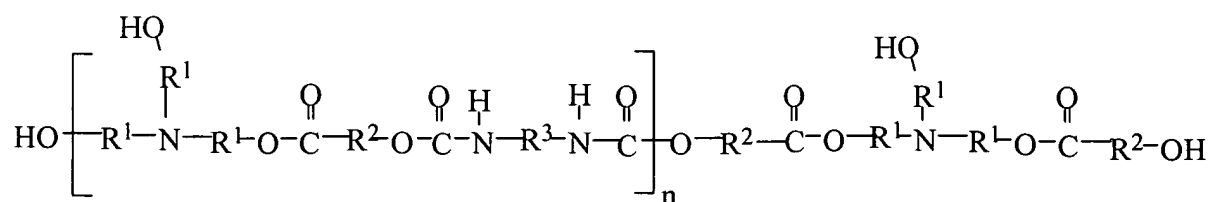
Please add the following new claims 57 and 58.

57. (Previously added) A composition having the chemical formula I:

Formula I

wherein R¹ is a C₂ to C₁₂ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group; R² is a C₁ to C₂₄ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group wherein said hydrocarbon group may be a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or a substituted alkylphenyl or alkylbenzyl group;

R³ is a C₂ through C₂₂ linear, cyclic or branch-chained saturated or unsaturated hydrocarbon group which is substituted or unsubstituted, an aromatic group, including a phenyl or benzyl

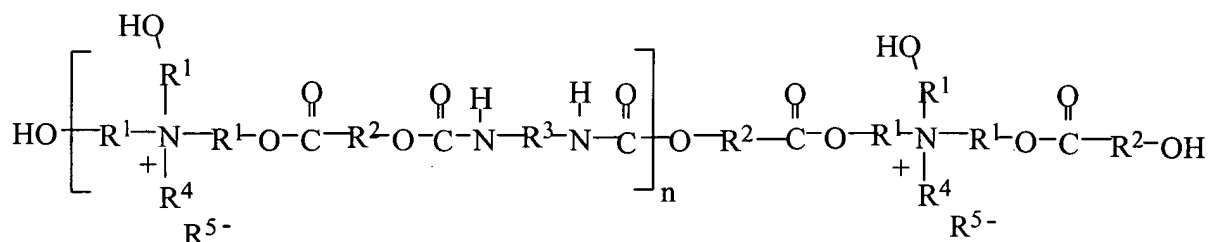


group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or substituted alkylphenyl or alkylbenzyl group; and

n is an integer from 2 to 5,000.

58. (Presently amended) A composition having the chemical formula II:

Formula II



wherein R¹ is a C₂ to C₁₂ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group which is either unsubstituted or substituted with a pendant hydroxyl group, R² is a C₁ to C₂₄ saturated or unsaturated, linear, branch-chained, cyclic or aromatic hydrocarbon group wherein said hydrocarbon group may be a phenyl or benzyl group or a substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or a substituted alkylphenyl or alkylbenzyl group;

R³ is a ~~C₂ through C₂₂ (preferably, C₆ through C₁₂)~~ C₁-C₂₄ linear, cyclic or branch-chained saturated or unsaturated hydrocarbon group which is substituted or unsubstituted, an aromatic group, including a phenyl or benzyl group or substituted phenyl or benzyl group, an alkylphenyl, alkylbenzyl or substituted alkylphenyl or alkylbenzyl group;

R⁴ is a quaternizing group formed by reacting the amine group to which R⁴ is attached with a quaternizing agent to form a quaternary amine group;

R⁵ is a counterion to the quaternizing quaternary amine group; and

n is an integer from about 2 to 5,000.